Tree Identification

A Guide for Helping Your Students Learn Tree Identification

Envirothon Training

Important Trees of the Sandhills Area

Longleaf pine

Loblolly pine

Virginia pine

Shortleaf pine

Dogwood

Red maple

Yellow-poplar

Black cherry

Sweetgum

Hickory

Southern red oak

Post oak

Turkey oak

Black tupelo (blackgum)

Redbud

Redcedar

TREE IDENTIFICATION TIPS

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PINES

Identify pines by the number of needles in a bundle. Pine needles are clumped in bundles, with a brown sheath, or fascicle, around the base of the needles. By counting the needles per bundle, it is easy to separate the species:

Three needles per bundle: the pine's name begins with an "L." It's either Loblolly or Longleaf. The Longleaf pine has very long needles and very stout twigs. The Loblolly has medium length needles and relatively fine twigs. Longleaf cones are very large.

Needles in two's and three's: the pine's name begins with the letter "S." It's either Shortleaf or Slash pine. The Shortleaf pine's needles are fairly short, whereas the Slash pine's needles can be almost as long as a Longleaf. Shortleaf cones are small and rounded. The bark of a mature Shortleaf is pockmarked with small craters, about the size of birdshot. Slash pine cones are large and have a short stem between the cone and the tree while they are still attached to the twig. Slash pine can look a lot like Longleaf, so count the needles!

Needles in two's: Virginia pine. The short, stiff, twisted needles form a "V," as in "Virginia."

Needles in five's: White pine. The needles are fine, flexible, and bluish green. Cones are long and slender, and often have white sap on them.

HARDWOODS

Opposite twigs, buds, and leaves

Native SC hardwoods with opposite (paired) twigs, buds and leaves can be remembered by using the acrostic, MAD BUCK. Those letters stand for Maple, Ash, Dogwood, and Buckeye. If the leaves buds, or twigs are in pairs, it's one of these.

Maples: Red Maple, the most common maple in the state, has red buds, red flowers, red fruit, red petioles on the leaves, red twigs and red fall foliage. It's the only tree in the state with opposite buds that are red. The bark of the tree is thin, relatively smooth, and gray.

Ash: The Green Ash has a much coarser twig than maple, and the twig is flattened at the buds. The buds are quite small, and the leaf scars are large. There are white speckles (lenticels) on the twigs. The bark on a mature tree has a basketweave look.

Dogwood: The leaf buds are tiny, and the terminal bud is slender and pointed. Flower buds are button-like. The older bark on a mature tree is blocky.

Buckeye: An uncommon tree in most of the state, has very stout twigs with brown buds. The buds are round and larger than those of ash, but the leaf scars are smaller than ash.

TIPS FOR LATE WINTER / EARLY SPRING TREE IDENTIFICATION

Trees are easily identified by twigs in winter, or by foliage in summer. The most difficult time to identify trees is early spring, when the buds begin to swell and thus lose their winter characteristics, but before leaves are present. The following tips can help you to identify trees more easily at this stage:

1. Remember to look first at bud arrangement on the twig (opposite or alternate).

2. Look at twig characteristics other than the buds (color, shape, presence of lenticels, thickness, smell).

3. Look at the entire tree. Bark, persistent fruits or leaves, branch angle, characteristic diseases (like Black Knot on cherry) are all clues which may give away the tree's identity.

4. Look for leaves or fruit on the ground near the tree. Be careful, since leaves can blow in from elsewhere.

5. Use a 10X hand lens. It is handy for looking at leaf scars or tiny buds.

HARDWOODS WITH *ALTERNATE* BUDS, TWIGS, AND LEAVES

Black Walnut: Twigs are very stout, with small, round gray buds. Leaf scars are large with three bundle scars, like dots, in each scar. The pith of the twig is chambered. Look for black nuts, larger than a golf ball, on the ground.

Hickory: There are several species, with different characteristics. The bark of a mature Shagbark hickory is very distinctive, and can only be confused with some specimens of White Oak. The hickory bark is hard and tough. Other hickories have a tight, hard bark which seems to have a basketweave pattern. Twigs are very stout, and buds are large and may be fuzzy, depending on species. Look for dark, thick hulls or tan-colored nuts on the ground.

River Birch: The bark is distinctively scaly. On younger bark, there are long, horizontal lenticels. Twigs are slender and have small, warty glands. Twigs have a wintergreen taste.

Beech: The bark is very smooth and light gray. Twigs are very distinctive with long, sharp buds that look almost like thorns.

Oaks

There are many oaks in SC, and the characteristics vary considerably. Leaves on the ground under a tree are the easiest way to identify them in the winter. All the oaks will have a cluster of three or more buds on the end of the twigs. There are two groupings of oaks: red oaks and white oaks. Red oaks have hard, rough-feeling bark. White oaks have light colored, corky-feeling bark.

The small-leaf red oaks (water oak, willow oak, and laurel oak) usually have leaves on the ground. Laurel oak is semi-evergreen and may have some green foliage in the winter. Twigs on the small-leaf red oaks are slender, and acorns are small.

The large-leaf red oaks (Southern Red, Northern Red, Scarlet, Black, and Shumard), are sometimes hard to tell apart even in summer. "Red Oak" is a good catchall name for them. Twigs are fairly stout, and buds are brownish and may be somewhat fuzzy. The leaves of the Southern Red Oak have the distinctive bell-shaped base. Acorns vary in size, but are usually somewhat fuzzy.

White Oaks (White Oak, Chestnut Oak, Swamp Chestnut Oak, Overcup Oak and Post Oak) have light-colored, soft, corky bark which is scaly or shaggy. Twigs are fairly stout. Look for leaves on the ground to distinguish which white oak you are dealing with. Acorns are large and smooth.

Other hardwoods

Winged Elm: Twigs are slender and have corky "wings" on them. The trees begin to bloom in February, with pinkish-brown flowers (not showy).

Sweetgum: Buds are shiny, as if they were varnished. Twigs are stouter than elm, but may have some corky growths (varies from tree to tree). Bark is light colored and very corky to the touch. Look for Sweetgum balls on the ground.

Sycamore: Brown buds are surrounded by the leaf scar. Mature trees have peeling outer bark, revealing white inner bark. Fairly late to leaf out in spring.

Black Cherry: Twigs have a waxy coating on them. Cut surfaces have a cherry-like smell. Trees often have Black Knot disease, making them easy to spot from a distance. Bark is smooth and covered with lenticels.

Yellow-poplar (Tulip-poplar): Terminal buds have two scales and resemble a duck's bill (very distinctive). Look for the distinctive seeds on the tree or on the ground.

Honey Locust: Big thorns, often three-pronged, on twigs, branches and trunk. Long, black, leathery, beanlike fruits may persist on the tree.

Black Locust: Short thorns in pairs on twigs.

Persimmon: Twigs have a waxy look, but not as much so as cherry. Buds are shaped like a serpent's head, broad at the base and bluntly pointed. In the leaf scar, there is a crescent-shaped bundle scar. Bark on a mature tree is blocky, and there may be persistent fruit on the tree or on the ground.

Black Gum: Twigs look very much like persimmon. In the leaf scar, bundle scars form three dots. Branches tend to grow at a 90 degree angle from the tree, or even angle downward.

Redbud: Twigs are zigzag from one bud to the next, and are covered with small white lenticels. Tree is small and shrubby. Thin, butterbean-like fruits may persist. Blooms early with intense, pink flowers.

Sassafras: Small tree with green to reddish, fine twigs. Buds are tiny and green, best examined with a hand lens. Twigs have tiny, black speckles. Freshly cut surface has the characteristic root beer smell.

Catalpa: Buds and leaf scars are whorled in arrangement, usually in 3's around the twig. The long, skinny, dark brown seed pods, often called "Indian cigars," are often present.

Evergreen Hardwoods

Live Oak: A spreading oak with small, evergreen leaves. Acorns are small, oblong, and shiny brown.

American Holly: Spiny leaves are distinctive. May or may not have red berries. Light, gray, smooth bark.

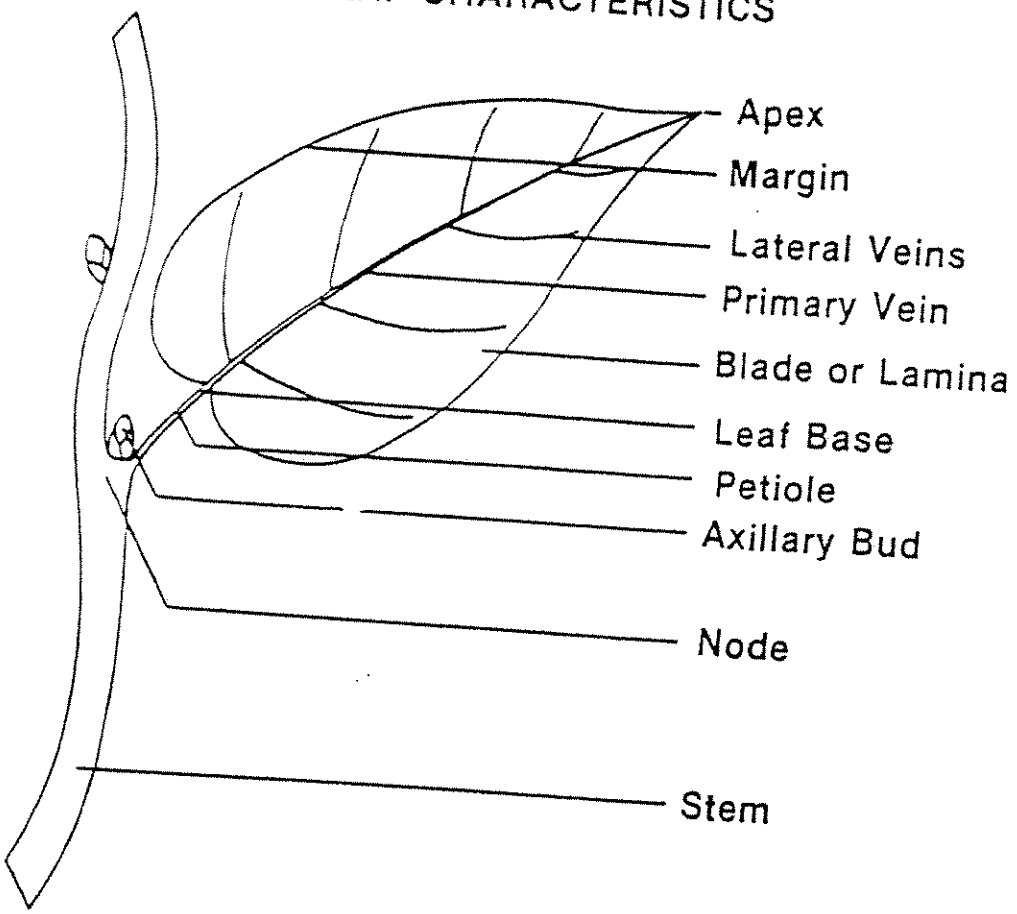
Southern Magnolia: Large, thick, leathery leaves.

Redbay: Leaves look like a miniature version of Magnolia, and have a spicy smell when crushed. Green underside. Grows in wet places, mostly in Coastal Plain.

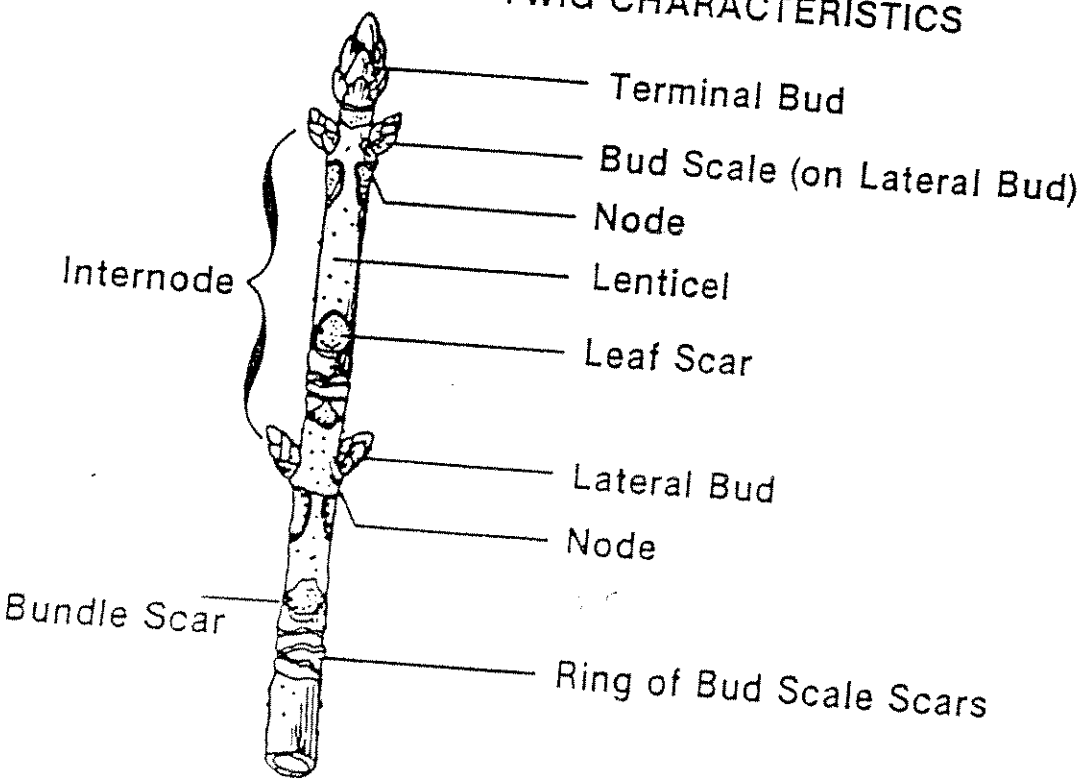
Sweetbay Magnolia: Looks like Redbay, but leaves are white underneath. Grows in wet places, mostly in Coastal Plain. Twigs have a terminal bud that resembles Yellow-poplar.

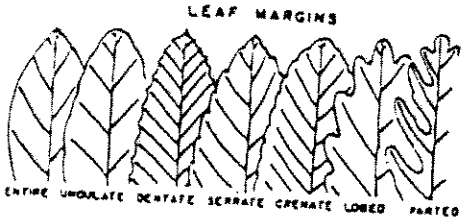
Carolina Laurel-cherry (sometimes called Cherry-laurel): Evergreen leaves with irregularly toothed edges. Twigs resemble black cherry, but with green foliage. Mostly found in Coastal Plain.

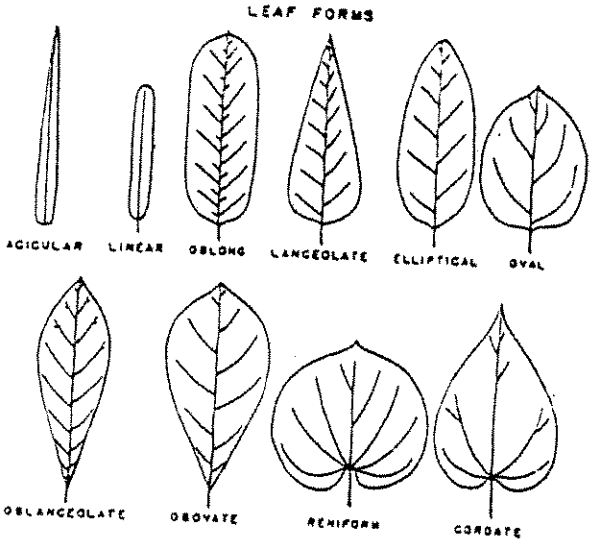
LEAF CHARACTERISTICS

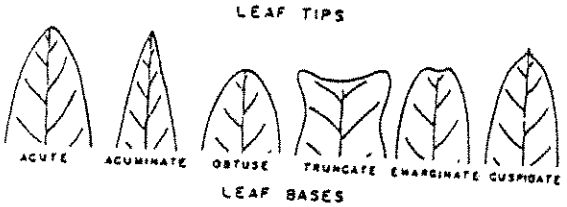


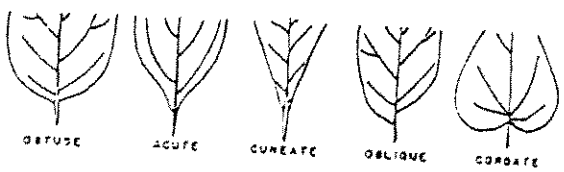
TWIG CHARACTERISTICS

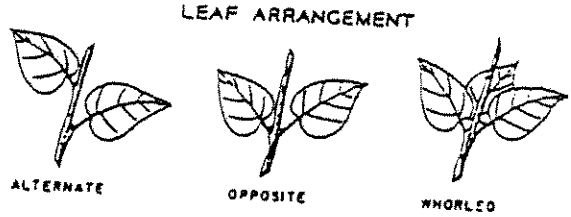


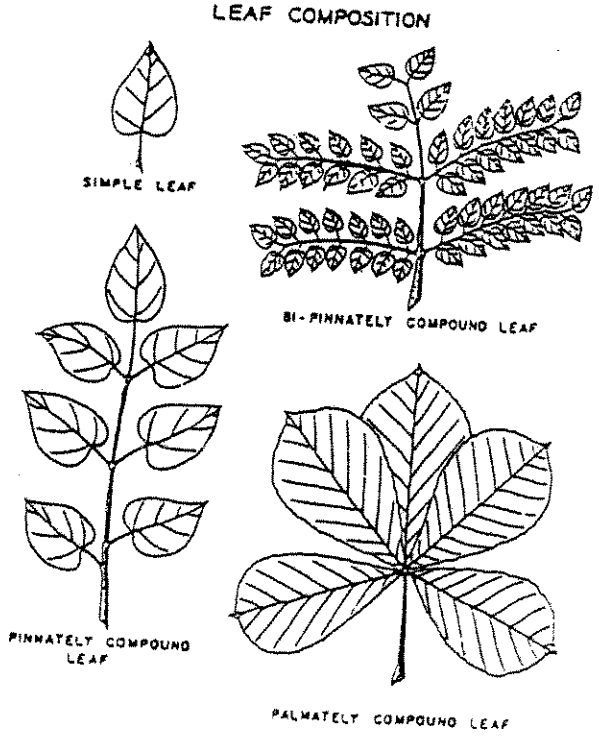












ACKNOWLEDGMENTS

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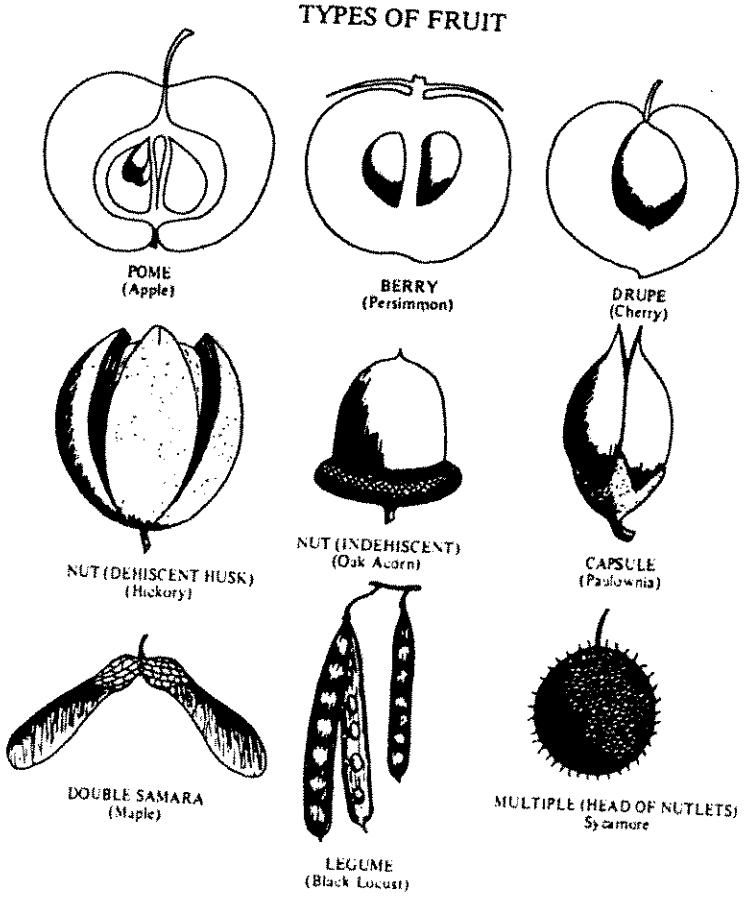
DESCRIPTION OF TERMS

alternate — leaves arranged singly at intervals along the stems
aromatic — with a pleasant spicy odor
apex — the tip or distal end of a leaf
blade (lamina) — the flat or expanded part of a leaf
bract — a small leaf or leaflike structure beneath a flower or flower cluster
bristle — stiff strong hair
bud scale — a small modified leaf on the outside of a bud
bud scale scar — the scar left on a twig when a bud scale falls
bundle scar — dotlike scars within a leaf scar, representing the broken ends of ducts which led into the leafstalk
chambered — a pith divided into empty compartments by cross partitions
compound — a type of leaf that has three or more leaflets attached to a common stalk
deciduous — trees on which all leaves fall at the end of every season of growth
dehiscent — the opening by slits or valves of an outer fruit covering
fascicle — a bundle or dense cluster of leaves
falcate — sickle- or scythe-shaped
fruit — the seed-bearing portion of a plant
- berry — a simple fleshy fruit, with seeds embedded in a pulpy mass (persimmon)
- capsule — a dry fruit which splits open into two or more parts at maturity (sourwood)
- drupe — a one-seeded fleshy fruit with the seed enclosed in a stony wall (cherry, sugarberry, holly)
- follicle — a dry fruit with one seam in the outer wall
- legume — a dry fruit with two seams in the outer wall (black locust)
- multiple — a fruit formed from several flowers into a single structure having a common axis
  - multiple of follicles—magnolia
  - multiple of samaras—yellow-poplar, ash
  - multiple of capsules—sweetgum
  - multiple of nutlets—sycamore, birch
- nut — a hard-shelled dry fruit, sometimes with a husk (hickory, oak acorn, black walnut)
- nutlet — a small nut
- pome — a fleshy fruit, with seeds incased by a papery wall (apple)

TYPES OF FRUIT



samara — a winged, one-cell, one-seeded, dry fruit (elm, double samara—maple)
globose — spherical
husk — outer covering of a nut
indehiscent — an outer fruit covering that does not open by slits or valves
internode — the part of a twig between two nodes
lateral bud — a bud that is situated along the sides of a branch and not at the tip
leaf — a lateral outgrowth from the stem whose primary function is the manufacturing of food
leaf margin — the border or edge of a leaf
crenate — a leaf margin that has rounded teeth
dentate — a leaf margin that has pointed teeth that are directed outward
entire — a leaf margin that is smooth without teeth or lobes
lobed — a segmented leaf having pointed or rounded extensions separated by sinuses that do not extend more than halfway to the midrib
parted — a leaf margin where the sinuses extend almost to the midrib
serrate — a leaf margin that has pointed teeth that are directed upward
serrate, doubly — a serrate leaf margin where the primary teeth support another set of teeth
undulate — a leaf margin that is wavy
leaf scar — the scar left on a twig when a leaf falls
leaflet — an individual blade of a compound leaf
lenticel — a corky spot on the bark which originally permitted air to enter the twig
midrib — the central or main vein of a leaf
node — the place on a twig where a leaf is attached
opposite — leaves occurring in pairs at the nodes
palmate — veins or lobes of a leaf radiating from a central point
pendant — hanging or drooping
persistent — remaining attached for long periods of time
petiole — stalk of a leaf
pinnate — arrangement of leaflets attached laterally along the rachis of a compound leaf
pith — central, usually soft portion of a twig
rachis — the midrib of a compound leaf
sessile — without a stalk, "sitting" on the stem
sinus — the space or indentation between the lobes of a leaf blade
spine — a sharp-pointed, rigid, thornlike structure
terminal bud — a bud that is at the tip of a stem or branch
truncate — abruptly cut off
whorled — leaves occurring three or more at a single node

LEAF KEY TO THE COMMON TREES OF SOUTH CAROLINA ILLUSTRATED IN THIS BULLETIN

1. Trees with needlelike or scalelike leaves (conifers)	2
1. Trees with broad flat leaves of many shapes and patterns (broadleaves)	11
2. Leaves needlelike	3
2. Leaves scalelike, sometimes prickly on young trees	Eastern redcedar
3. Leaves in bundles or clusters (fascicles) of 5 or fewer (pines)	4
3. Leaves not in bundles or clusters	10
4. Leaves in bundles of 5	Eastern white pine
4. Leaves in bundles of 2 or 3	5
5. Leaves in bundles of 2	6
5. Leaves in bundles of 3 or of 2 and 3	7
6. Leaves twisted, mostly 2 inches long or shorter	Virginia pine
6. Leaves not twisted, mostly more than 2 inches long	Spruce pine
7. Leaves in bundles of 2 and 3	8
7. Leaves in bundles of 3	9
8. Leaves short (2-4 inches), cone small (2-3 inches)	Shortleaf pine
8. Leaves long (6-10 inches), cone large (4-6 inches)	Slash pine
9. Leaves very long (10-14 inches), cone very large (8-10 inches)	Longleaf pine

9. Leaves 5-9 inches long, cones 4-6 inches	
10. Leaves flattened, evergreen, white on underside	Loblolly pine
10. Leaves fern-like, deciduous, green on both sides	Eastern hemlock
11. Leaves fan-shaped, 2 or more feet across	Baldcypress
11. Leaves otherwise	
12. Leaves opposite or whorled	Cabbage palmetto
12. Leaves alternate	12
13. Leaves in whorls of 3	13
13. Leaves opposite in pairs	17
14. Leaves compound	Southern catalpa
14. Leaves simple	14
15. Leaflets 3-5, margins with coarse large teeth or shallowly lobed	15
15. Leaflets 5-9, margins smooth or with fine serrate teeth	16
16. Leaves 3-5 lobed, margins doubly serrate	Boxelder
16. Leaves unlobed, margins smooth	White ash
17. Leaves compound	Red maple
17. Leaves simple	Flowering dogwood
18. Twigs with thorns, spines, or prickles	18
18. Twigs without thorns, spines, or prickles	23
19. Twigs with long thorns, leaves twice compound	19
19. Twigs with short spines, leaves once compound	20
20. Leaves with terminal leaflets larger than lateral leaflets, twigs with solid pith	Honeylocust Black locust
20. Leaves with terminal leaflets the same size as lateral leaflets, twigs with chambered pith	21
21. Leaflets 5-9, leaflets, petiole, and rachis densely hairy	Black walnut
21. Leaflets 3-7, leaflets, petiole, and rachis smooth or nearly so	
22. Bark shaggy, peeling in long strips	Mockernut hickory
22. Bark tightly furrowed, not peeling	22
23. Leaves evergreen, thick and leathery	Shagbark hickory
23. Leaves deciduous, thin and papery	Pignut hickory
24. Leaves with spine-toothed margins	24
24. Leaves with smooth margins	27
25. Leaves large, over 6 inches long, with rusty hairs beneath	American holly
25. Leaves small, 2-5 inches long, without hairs	25
26. Leaves densely white beneath, without lobes	Southern magnolia
26. Leaves greenish or slightly white beneath, occasionally with lobes	26
27. Leaves lobed	Sweetbay Live oak
27. Leaves unlobed or with occasional small shallow lobes	28
28. Leaves with 3 shapes (unlobed, lobed, 3-lobed)	41
28. Leaves with one basic shape	29
29. Leaves with smooth margins	30
29. Leaves with serrate margins	
30. Leaves star-shaped, with 5 to 7 lobes	Sassafras
30. Leaves not star-shaped	Red mulberry
31 Tip and base of leaves truncate, shallowly 4-lobed	Sweetgum
31. Leaves not truncated	31
32. Leaves with 3 or more main veins, margins with large coarse teeth	Yellow-poplar
32. Leaves with 1 vein, margins deeply lobed (oaks)	32
33. Leaves with smooth, rounded lobes (white oaks)	American sycamore
33. Leaves with bristly tipped lobes (red oaks)	33
34. Lobes similar with sinuses halfway to midrib	34
34. Lobes uneven with varying depths of sinus	36
35. Three upper lobes square, forming a cross, deep central sinus	White oak
35. Three upper lobes pointed, shallow, central sinus	35
36. Base of leaves bell-shaped, 3-5 leaflets with terminal lobe long and narrow	Post oak Overcup oak
36. Base of leaves tapering or rounded with terminal lobe and lateral lobes of the same size	Southern red oak

37. Base of leaves strongly tapering	Turkey oak
37. Base of leaves rounded or shallowly tapering	38
38. Base of leaves rounded, shallowly 3-lobed, with minute bristles at the tip of the lobes	Blackjack oak
38. Base of leaves shallowly tapering with 5 to 7 lobes	39
39. Leaves leathery, hairy beneath	Black oak
39. Leaves papery, without hairs beneath	40
40. Lobes large, sinuses shallow, narrow	Northern red oak
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41. Leaves with smooth margins (or occasionally with shallow teeth)	42
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42. Leaves heart-shaped	Eastern redbud
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43. Leaves deciduous and fall off the tree before winter, 4-10 inches long	45
44. Leaves with occasional lobes and teeth, having a long tapering base	Water oak
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47 Leaves widest in upper half	Black tupelo
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50. Leaf margins with doubly serrate teeth	53
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53. Leaves that have bases with unequal sides (elms)	54
53. Leaves with symmetrical bases	55
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55. Leaf bases broadly wedge-shaped	River birch
55. Leaf bases rounded or tapered	American hornbeam
56. Leaves 4 or more times as long as wide	Black willow
56. Leaves not more than twice as long as wide	57
57. Leaves heart-shaped, white beneath	White basswood
57. Leaves not heart-shaped, green beneath	58
58. Midvein paralleled by two prominent lateral veins from leaf base	Sugarberry
58. Midvein distinct, often with rusty hairs beneath	Black cherry